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# ALASKA AGRICULTURAL EXPERIMENT STATIONS SITKA, ALASKA

Under the supervision of the  
UNITED STATES DEPARTMENT OF AGRICULTURE

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## REPORT OF THE ALASKA AGRICULTURAL EXPERIMENT STATIONS, 1923

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### REPORT OF THE AGRONOMIST IN CHARGE

By C. C. GEORGESON

The outstanding event in the history of the Alaska experiment stations in 1923 was a visit from Warren G. Harding, President of the United States, with the Secretary of Agriculture, and other notables. The presidential party arrived at Fairbanks on the afternoon of July 15, and after being taken to the Agricultural College and School of Mines, visited the Fairbanks station adjoining the college. The grains were not ripe, but looked promising, and there was a wealth of flowers about the cottage of the assistant in charge of the station. The President was conducted over the grounds where experimental plats were demonstrating the value of leguminous crops for green manure, and was especially attracted by, and made favorable comments upon, the wheat plats, which showed a notable vigor, due to green manuring. (Pl. I, fig. 1.)

Sitka station was visited Sunday, July 22. The U. S. S. *Henderson*, bearing the presidential party, anchored in the harbor early in the morning, and the President, accompanied by Mrs. Harding, and other members of the party, visited the Sitka station in the afternoon. The President expressed himself as being well pleased with what he saw, and was interested particularly in the hybrid strawberries.

A party of Members of Congress also visited Alaska during the summer. (Pl. I, fig. 2.)

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PLATE I.



FIG. 1.—SPRING WHEAT AT FAIRBANKS STATION. PEAS PLOWED UNDER ON LEFT, NO MANURE AT RIGHT



FIG. 2.—CONGRESSIONAL TRAIN AT FAIRBANKS STATION

## LEADING PROJECTS UNDER EXPERIMENTATION

Of the more than 50 projects that are now under investigation and experiment, the following are the leading:

(1) The production of grains that are suited to the climate of Alaska. This work includes the hybridization of wheat, barley, and oats, as well as the testing of varieties which have been obtained from outside sources.

(2) The production of a hardy dairy cow. Some progress has been made by making reciprocal crosses between Galloways and Holstein-Friesians.

(3) The production of hardy cattle that will be suited to the regions north of the Arctic Circle and at the same time adapted for beef and for work. With this object in view, crosses are being made between Galloways and yaks. No results have been had, as yet.

(4) The production of hardy strawberries. The results of this work up to date have been given in the annual reports and summarized in a recent bulletin of the stations.<sup>1</sup>

(5) The development of early maturing potatoes that are better suited to Alaskan conditions than those now available. In this experiment, seedlings are being raised from potato balls, which, in some cases, resulted from blossoms artificially cross-pollinated.

(6) Experiments with legumes to determine the kinds that are best suited for forage and for soil renovation.

(7) Propagation, testing, and dissemination of fruit trees and fruit bushes.

(8) Work in many lines of horticulture, including vegetables, and the testing and propagation of hardy ornamental plants.

## WEATHER CONDITIONS

The season on the whole was favorable, the weather being a little warmer and drier than normal. In the interior, the growth of straw was shorter than ordinarily, due to lack of rainfall. At the Fairbanks station the average temperature for May, June, July, and August was 57° F. compared with the 13-year average of 55.2°. The rainfall for the same months was only 3.96 inches, compared with an average for the 13 years previous of 6.25 inches. At Matanuska the average temperature for the four summer months was 56.6°, while the rainfall was only 3.3 inches. The amount of moisture in the ground is governed to a great extent by the snowfall, and since the snowfall is normally between 3 and 4 feet, and the snow does not disappear until the latter part of April, and in shady places not until May, the snow water is largely absorbed by the soil and is conserved for plant growth. Grain crops could not be raised on so light a rainfall as was had in 1923 were it not for this fact. The warm summer hastened growth so that even late varieties of grain which seldom ripen in the interior matured in 1923. At the Fairbanks station the last killing frost occurred May 10, and the first September 23, giving a frost-free period of 135 days, which is 33 days more than the average for 13 years. At Matanuska the last killing frost occurred May 17, and the first September 23, giving 128 consecutive days without frost. The same conditions prevailed in the coast region and other parts of

<sup>1</sup> Alaska Stas. Bul. 4, The production of hardy strawberries for Alaska.



Alaska. The season of 1922 was noted for its cool, wet summer, which retarded maturity of grains and produced excessive growth of straw. Very little grain matured in consequence of the prolonged and excessive rainfall. The reverse was true of the season of 1923. The summer was warmer, and the rainfall scant, barely enough rain falling to produce normal growth. Consequently all grain crops matured, and what is true of grains is also true of garden truck, berries, horticultural products in general, and flowers.

## GRAIN CROPS

### WHEAT

Only spring wheat can be successfully grown in Alaska. Experiments with winter wheats are in progress at the Fairbanks and Matanuska stations, but so far no variety has been found that does not winterkill. The variety known as Fortyfold offers some promise as a winter wheat. Siberian No. 1 and Romanow, two varieties of spring wheat, have been grown at the stations for many years. Both are of Russian origin and both are successful in interior Alaska in normal seasons. They were grown on a field scale both at Fairbanks and at Matanuska. Siberian No. 1 is the earlier of the two, maturing in 3 to 6 or 7 days sooner than Romanow. Seeded at Fairbanks on May 19, Siberian No. 1 was harvested August 13, occupying the ground for 86 days. Grown under identical conditions with Romanow, Siberian No. 1 was also a better yielder, and in 1923 produced 25.8 bushels per acre at the Fairbanks station.

The following varieties were grown in test rows at the Fairbanks and Matanuska stations (Pl. II, fig. 1): Kota, Marquis, and two crosses between these two varieties, Kitchener, Champion, Red Fife, Glyndon, Ruby, Wellman, Kinney, Ladoga, Preston, Prelude, Converse, Red Bobs, Haynes Bluestem, Huston, White Federation, Federation, Hard Federation, Egyptian, Power, Pioneer, Irkutsk, Blue Ribbon, Ulka, Omega, and Beta. Their behavior at both stations was identical. Those giving promise of success in favorable seasons are Ladoga, Ruby, Prelude, Red Bobs, Irkutsk, Omega, and Beta, the latter two of which are Russian hybrids. Having lost their seed in 1922, the farmers, through the Fairbanks Farmers' Agricultural Association, imported seed from South Dakota for the 1923 crop. Ruby wheat predominated, and gave fairly good satisfaction, the season being favorable to its growth. None of these wheats can compare in earliness with Siberian No. 1, which would seem, therefore, the safest variety to plant.

*Hybrids.*—In the work of establishing varieties of wheat that will be better yielders than are the introduced sorts, the station is growing a number of hybrids, among which are the following: Hybrid No. 24 (Red Fife  $\times$  Ladoga), and Hybrid No. 30 (Siberian No. 1  $\times$  Marquis), which is the best of the wheat hybrids so far produced, having large heads and larger grain than has Siberian No. 1. It is, however, a few days later in maturing than Siberian No. 1, and in 1923 ripened in 89 days from seed. Hybrid No. 62 (Siberian No. 1  $\times$  Marquis) is a large, vigorous, bearded type, and an excellent variety, which matures a few days later than Hybrid No. 30, of the same parentage. Hybrid No. 63 (Siberian No. 1  $\times$  Romanow) is a

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PLATE II



FIG. 1.—WHEAT PLATS, FAIRBANKS STATION, 1923



FIG. 2.—BARLEY HYBRID NO. 19. A HULL-LESS VARIETY THAT PRODUCED 34.8 BUSHELS PER ACRE IN 1923

bearded type having dark glumes, and will likely be of value in some situations. Hybrid No. 64 (Siberian No. 1  $\times$  Ladoga) is also a bearded type having dark glumes. It matures slightly later than does Hybrid No. 30. Hybrid No. 100 (Hybrid No. 30  $\times$  Red Bobs) ripened August 22, which was nine days later than Siberian No. 1. Two hybrids between Kota and Marquis, obtained from the North Dakota experiment station, do not promise as well as varieties already at the station. The hybrids which were produced at the Rampart station are earlier than any of the above-mentioned varieties obtained from outside sources. Pedigreed selections from Siberian No. 1 are superior in size of head and vigor of growth, but not in earliness, to the original stock from which the selections were made. The varieties named were also grown at the Matanuska station with almost identical results.

#### BARLEY

Barley is destined to take the place of corn as a stock feed in Alaska. Since nearly all varieties mature earlier than do either spring wheat or oats, the crop can almost surely be depended upon to mature even in adverse seasons. It has been observed at the stations that the earlier varieties, which because of their earliness are considered the more desirable, usually lack vigor, lodging and making poor yields. Persistent efforts are being made to develop, by crossing, varieties which are reasonably early and have neither of these defects.

All of the following varieties were grown at the Fairbanks station in 1923, and most of them at the Matanuska station: Hybrid No. 1 (Champion  $\times$  Pamir), the result of the first cross, a hooded type having rather rough heads and brittle rachis when fully dry. This hybrid is intermediate in earliness between Champion and Pamir, and has been used in crossing with other types; Hybrid No. 14 (Hull-less, S. P. I. No. 19851  $\times$  Abyssinian, G. I. No. 362), a bearded, hull-less, 6-rowed type having very large heads, which help to cause breaking of the straw by catching wind and moisture. Other types of the same cross include a not very early 6-rowed, beardless and hull-less variety having large heads and stiff straw; and a promising 2-rowed, beardless, hull-less variety having stiff straws. Other barleys grown include Hybrid No. 17 (Hybrid No. 1  $\times$  Finland), a beardless, 6-rowed, medium early sort, which ripened August 17; Hybrid No. 19 (Hybrid No. 1  $\times$  Hull-less, S. P. I. No. 12709), which is by far the most valuable type yet produced in Alaska, being an early-maturing, beardless, hull-less sort with stiff straw, and ripening August 9, in 82 days from seed, with a yield of 34.8 bushels per acre (Pl. II, fig. 2); Hybrid No. 20 (Hybrid No. 1  $\times$  Hansen), a very early ripening barley, though not a heavy yielder, which occupied the ground for 79 days from seed; Hybrid No. 21 (Hybrid No. 1  $\times$  Abyssinian, G. I. No. 362), a 2-rowed, black type having good heads and large kernels, which ripen somewhat later than Hybrid No. 19; Hybrid No. 28 (Hybrid No. 14  $\times$  Hansen), a vigorous, medium-early type, which ripened August 16; Hybrid No. 44 (Hybrid No. 20  $\times$  Pamir), which has small, rough heads, and ripened August 10; Hybrid No. 65 (Highmore  $\times$  Hybrid No. 20), a hull-less type which is not as yet stable, but promising; Hybrid No. 66



(Highmore  $\times$  Hybrid No. 20), a hulled type, which is promising, but not stable; Hybrid No. 67 (Hybrid No. 28  $\times$  Highmore), a promising sort, but not stable; Hybrid No. 68 (Highmore  $\times$  Hybrid No. 19), a very promising sort, which is not as yet fixed (Pl. III, fig. 1). Twenty-one different types of this cross were seeded May 19. The earliest was ripe by August 4, 77 days from seed, and the latest was harvested August 10. Much is expected from this cross.

Varieties which were obtained from outside sources include Eagle, a promising, 2-rowed, bearded sort, with stiff straw and large kernels; North Dakota, No. 1618 (Smoothawn  $\times$  Manchuria), which was ripe August 10, but partly sterile; North Dakota Hybrids Nos. 60 and 70 (Smoothawn  $\times$  Manchuria), which also were partly sterile; Minnesota Pedigree, an early, bearded form with nodding heads which was partly sterile; North Dakota Manshury, No. 1632, or Manchuria, a well-known, 6-rowed, bearded variety, which ripened August 10; Gatami, a 6-rowed, black, bearded sort having small heads, which ripened August 10; Smyrna, which lacked vigor and was discarded; Meloy, a hooded, 6-rowed type of medium size and vigor, which ripened August 16; Pamir, S. P. I. No. 18922, an early, 6-rowed, bearded sort, which was used in crossing and was grown for purposes of comparison with the hybrids; Old's Montana, a poor sort, which ripened August 18 and was discarded; Yakutsk, a 6-rowed, bearded Siberian barley, which had weak straw and showed a lack of vigor, and ripened August 10; Hansen, G. I. No. 279, a 6-rowed, bearded, medium-early variety, which lodged to considerable extent; Abyssinian, G. I. No. 362, a 2-rowed, black, bearded variety, and one of the parents of Hybrids Nos. 14 and 21. It ripened August 18. Boehme, S. P. I. No. 19851, was an early variety, which had weak straw and always lodges; Lapland, a variety which is very similar to Manshury, and ripened August 18; Hull-less, S. P. I. No. 12709, which was an early variety with weak straw, and the staminate parent of Hybrid No. 19. The weak straw defect has not been transmitted to Hybrid No. 19, which has remarkably stiff straw. Bodo, is a 6-rowed, bearded sort with dense heads. It ripened August 10.

#### OATS

The oat crop was excellent both at the Fairbanks and the Matanuska stations. Several valuable hybrids, of which the following should be especially noted, were produced at the Rampart station: Hybrid No. 25 (Copperfield  $\times$  Toholampi), the staminate parent of which was obtained from Finland a dozen years ago, a vigorous growing oat having stiff straw, broad leaves, and plump, gray kernels. It is perhaps the earliest oat, and was grown in several plats where the grain ripened between August 6 and August 10. This oat, due to its earliness, plump kernels, vigorous growth, and broad leaves, will likely be a valuable variety for hay and silage for interior Alaska. Two types of Hybrid No. 35 (Hybrid No. 25  $\times$  South Dakota) were selected, one a black oat with heavy kernels, and the other a gray oat with slender kernels. Both are early, ripening August 10. Several types of Hybrid No. 36 (Black Tartarian  $\times$  Yakutsk) were selected, one of which is a promising bright yellow sort with plump kernels. All types of this cross were

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PLATE III



FIG. 1.—SOME FORMS OF BARLEY HYBRID NO. 68, FAIRBANKS STATION



FIG. 2.—HARVESTING HOGOT WINTER RYE, FAIRBANKS STATION, 1923

ripe August 18. Hybrid No. 51 (Hull-less  $\times$  Norwegian) is perhaps the best hybrid in some respects, but it is not as early as could be desired, and is multiferous like the mother. Several types of this hybrid were selected, one a white oat resembling Hull-less, and another having black glumes resembling the staminate parent. Still other types are intermediate. All are hull-less, and being earlier than the mother is, can be matured in northern latitudes. It is thought that the clean, white, hull-less seed can be used as a breakfast food without being milled. Several tracts were seeded with this oat May 22, and the various plats ripened between August 15 and August 26. Two types of Hybrid No. 52 (Hansen  $\times$  Norwegian) were selected, one a white sort, and the other, a black. Both were ripe August 18.

The following-named varieties, which were obtained from outside sources, were grown at the two stations: Finnish Black, a tall, vigorous oat having open panicles, but very slender kernels; this oat ripened in 79 days from seed, being harvested August 8; Early Norwegian, so-called, which is not, however, very early, failing to ripen until August 23; Norwegian, G. I. No. 500, which is the staminate parent of Hybrids Nos. 51 and 52, and ripened August 22; Norway, G. I. No. 518, which was ripe August 22; Wisconsin Pedigree No. 1, which ripened August 23; Canadian, a valuable white oat, ripened August 16, yielding 79 bushels to the acre at the Fairbanks station; Wisconsin Pedigree No. 7, Pearl, and Gold Rain, which were ripe August 18; Kherson, a medium-early, white oat having slender straw; this oat was ripe August 18; Celog I, an oat with plump kernels; it ripened August 10; Yakutsk, G. I. No. 498, an early Siberian variety, which ripened this year in 76 days from seed; Hansen, which was ripe August 20; Daubenay, which ripened August 13; and Leader, a late side oat of heavy growth, broad leaves, and abundant foliage; it ripened August 22 this year, but failed to ripen in 1922. The best types of the hybrids that have been produced in Alaska will be selected and pedigreed, and the best forms disseminated among the farmers.

#### RYE

Spring rye has been tried for several years at the Rampart and the Fairbanks stations. It was tried again this year at Fairbanks, but without success. Spring rye matures later than does any variety of wheat, and therefore has practically no chance of becoming an important crop for interior Alaska.

Winter rye, on the other hand, is a conspicuous success. Many sorts were tried in former years, but none of them compared with the variety Hogot, which was obtained from Russia a few years ago. This variety is superior to all others for the interior. That winter rye can be successfully grown in the interior is shown by the following incident: On June 10, 1922, half an acre plat was seeded to rye and peas at the Fairbanks station. Both crops sprang up promptly and made a perfect stand. When the crops were a few inches high, the patch was pastured by a calf, a goat, and a horse during nearly every day all summer. The peas were especially relished and kept cropped down to the ground. The rye stood, made large bushy plants before cold weather, and in the spring of 1923 gave a 100 per



cent stand, which reached a height of 7 feet. (Pl. III, fig. 2). This crop was ripe and harvested August 1, when it yielded 655 pounds of grain, or at the rate of 23.4 bushels per acre. The small field served to demonstrate how rye, or peas, or vetch can be sown together in a crop rotation scheme furnishing excellent pasture, and a good crop of rye for the following year.

#### LEGUMES

In view of the fact that legumes are destined to play a very important rôle in the agriculture of Alaska, experiments are being carried on with a number of leguminous crops to determine their relative value for feed, and for maintaining the fertility of the soil. All three of the interior stations are engaged in this work.

*Alfalfa*.—Alfalfa is the most promising of the perennial legumes. The yellow-flowered sort (*Medicago falcata*) is the only hardy alfalfa that has so far been found. From a very small lot seeded 13 years ago, upwards of 10 acres of this species has been produced at Rampart, and seedlings have also been grown at Fairbanks and at Matanuska. The season of 1923 was favorable to this crop, as well as to everything else, probably over 240 pounds of seed being saved at the Rampart station. The seed is of very fine quality, and will be used in extending the areas, some being planted at the stations, but the greater portion will be distributed among the farmers in the Yukon, Tanana, and Matanuska Valleys. *M. falcata* has slenderer stems and smaller foliage, and yields a lighter crop of hay than is true of common alfalfa. This valuable species is now thoroughly established at the stations, and although it has demonstrated its hardiness and adaptability to interior conditions, experiments are being made from time to time with other varieties which are reputed to be hardy. In 1919, for example, the varieties Grimm, Chernob, North Swedish, and Semipalatinsk were tried at the Fairbanks station, but either died or so deteriorated in vigor as no longer to justify their occupation of the ground. *M. falcata*, on the other hand, has maintained itself, and is ripening seed.

Plants of Grimm, Baltic No. 11-C, *M. falcata*, and hybrids between Grimm and *M. falcata*, were seeded at the Matanuska station in 1922. Grimm winterkilled in 1922 and 1923 to the extent of 65 per cent. Baltic No. 11-C, which was obtained from a seed farm in Montana, froze out slightly, while the hybrids between Grimm and *M. falcata* did not winterkill. The stations are hoping to develop from the hybrids a variety which will be superior to *M. falcata*. Of the many types produced, the best is more vigorous than *M. falcata*, and has larger leaves and more upright stems. Its flowers are partly yellow and partly purple, with both purple and yellow flowers on the same plant. *M. falcata* has almost straight seed pods which dry out upon ripening and freely shatter the seed. The hybrid, on the other hand, has curved, partly spiral seed pods, a character which has been inherited from Grimm, and by virtue of this it does not shatter the seed, as the pods do not split open readily. The hybrid of another cross of this kind was not found to be entirely hardy in severe winters at the Rampart station, where the snow blew off the ground. It is thought that this hybrid will prove to be entirely hardy at Matanuska, where the winters are somewhat milder than is the case in the Yukon and Tanana Valleys.



Samples of alfalfa seed, labeled Orenburg, Orenburg Selection No. 1, Orenburg×Cossack. and Perkins Hybrid No. 1, and obtained from Montana, were sown at the Matanuska station in 1923. A small lot of seed of the variety Hardigan, obtained from the Michigan experiment station, and samples of the varieties *M. sativa*, *M. lupulina* No. 168, *M. lupulina* No. 169, and *M. falcata*, obtained from Russia, were sown at the Matanuska station, where their progress will be watched with interest.

The stations have repeatedly experimented with common alfalfa, but since it invariably winterkills, no further trials will be made with it.

*Annual vetch*.—In the spring of 1923, one-third acre plats were seeded at the Fairbanks and Matanuska stations with spring vetch, purple vetch, woolly vetch, and hairy vetch, all of which did well.

The spring vetch ripened August 23, and yielded 255 pounds of clean seed per plat. The purple vetch likewise ripened seed August 23, and yielded 195 pounds per plat. Neither the woolly nor the hairy vetch ripened seed.

*Perennial vetch*.—Another legume of much promise for interior Alaska is *Vicia cracca*, which has been grown at Rampart for several years. The area devoted to the crop has not been much extended, however, for the reason that only a small amount of seed has been produced. This vetch propagates freely by rootstocks, and is readily transplanted by this means, but the process is laborious and, therefore, more expensive, than propagating by seed. In 1921, seed was sown in a favorable place at the Rampart station, and made better growth than formerly, yielding 160 pounds of seed in 1923. It likely will prove to be of great value in suitable locations. At Rampart, the crop grows to a tangled mass ranging from 2½ to 3 feet in height. Livestock greedily eat it. Vetch makes excellent hay, and can be mixed with other plants for silage, as for instance, with green oats. The seed now on hand will be sown under varied conditions of soil and moisture for experimental purposes.

*Clover*.—*Trifolium lupinaster* is another perennial legume which is hardy, produces seed freely, and never winterkills. Seed was sown several years ago at the Rampart station, and the plants have proved to be more vigorous than those grown in the original place. *T. lupinaster* is not a great producer of feed, however, and for that reason has not been introduced at other places. It is not likely to be of great value as a farm crop.

*Peas*.—Next to the alfalfa, field peas have proved to be the most valuable legumes. Yellow Canadian, the ordinary field pea, does not always mature seed in interior Alaska, and the shipment of pea seed from outside into the interior is rather expensive. Years ago, the Rampart station developed an early maturing strain of garden pea, known commercially as Alaska, which matures seed every year. All the stations depended on this variety for seed until 1923, when the common field pea matured seed freely, due to favorable weather conditions. Peas ripened not only at the stations, but also on many farms, especially in the Matanuska Valley (Pl. IV, fig. 1). On one farm in Matanuska, field peas were pastured by shotes which grew rapidly and reached marketable size in November. At the Matanuska station a combination of peas and oats made excellent silage. The value of the pea crop has been thoroughly demonstrated.

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PLATE IV



FIG. 1.—SETTLER IN MATANUSKA VALLEY MAKING PEA HAY



FIG. 2.—JERUSALEM ARTICHOKE GROWN FOR SILAGE AT MATANUSKA STATION, 1923

*Rotation experiments with legumes.*—The vetches mentioned above were seeded for the purpose of testing their relative value for plowing under in rotation experiments. Peas and clovers also entered the same rotation. Since the two first-named varieties (spring vetch and purple vetch) matured seed so early and it was desirable to obtain the seed, they can not be compared with the two varieties (woolly vetch and hairy vetch) maturing no seed, in the amount of fertilizing elements contributed to the soil. The peas likewise matured seed, and about 75 per cent of the red clover crop ripened by September 1. Red clover, treated as an annual, has done exceedingly well at the Fairbanks station, where it forms a dense crop standing 2 to 2½ feet in height, and bears a mass of blossoms by the latter part of August. All of these legumes have demonstrated their value as soil renovators, although it has not as yet been determined which is the best in extended field experiments. At the Matanuska station, red clover is not as thrifty as it is at the Fairbanks station, and it invariably winterkills. White clover, on the other hand, is hardy, but is of value only as a mixture in pastures.

#### SILAGE

*Artichokes.*—Hon. Joseph C. Sibley, of Franklin, Pa., who is much interested in the possibilities of farming in Alaska, donated 10 bushels of Mammoth White French Jerusalem artichokes for experiment to the Alaska stations. Two bushels of seed were planted at each of the stations at Matanuska, Fairbanks, Rampart, and Sitka, and 4 bushels at Kodiak. Owing to slow transportation facilities, plantings were not made until June 9. The crop made vigorous growth, averaging, at Fairbanks, 5 feet in height, at Matanuska, 6 feet (Pl. IV, fig. 2), at Sitka, 6 to 7 feet, and at Kodiak, 4 feet. Only a few of the tubers were dug, as it is the hope of the station to establish a permanent crop for use as silage, for which purpose the tops seem well adapted. Artichokes are better than sunflowers in that they branch profusely; their stems are smaller than those of the sunflower, but they bear abundant leafage. The crop will receive a top dressing of sodium nitrate in the spring of 1924 with a view to increasing the growth of tops. Artichokes are a promising crop, but further comment concerning them can not be made at this time.

*Sunflowers.*—Small patches of a few rows each were planted at the Fairbanks and the Matanuska stations with Russian Mammoth sunflowers. The crop was not a success at Fairbanks, possibly because it was grown on a west slope where the soil is not rich. The plants attained a height of only 4 feet, and failed to bloom. They have reached a height of 7 feet in former years at the Fairbanks station, and developed large heads. At Matanuska, on the other hand, they reached a height between 6 and 7 feet, and about 50 per cent of the crop bloomed. The plants were cut for silage and, when used with oats and peas, made good feed. It is questionable whether sunflowers can be recommended for general planting for this purpose in Alaska. They will not mature seed.

*Soybeans.*—The varieties Mandarin and Pekin were planted May 15 and grew slowly. By the end of August, the plants stood only 22 inches high, and none of them reached the blooming stage. Evidently interior Alaska is not a soybean country.



## HORTICULTURE

## VEGETABLES

The season of 1923 was favorable to the production of vegetables of all sorts. All the hardy vegetables and root crops, and even tomatoes and cucumbers, when given some care, were grown at the Rampart and the Fairbanks stations (Pl. V, fig. 1). Celery, cabbage, cauliflower, parsnips, beets, onions, and the like, grown last year at the several stations, compared favorably well with similar crops which were grown elsewhere. Rhubarb especially was superb. Rhubarb is hardy anywhere in Alaska, and needs no protection even when the temperature falls to 60° F. below zero. The Petrowski turnip, the seed of which was obtained several years ago through the Office of Foreign Seed and Plant Introduction of the Department of Agriculture, is an ideal turnip for Alaska, thriving everywhere. The seed is grown in abundance by the stations for distribution to settlers throughout the Territory. Petrowski is superior in flavor and texture to all other cultivated varieties which are grown in Alaska. It is not a large turnip, however, seldom exceeding 6 inches in diameter.

## CORN

Small samples of the following varieties of corn were received from the Department of Agriculture and planted at both the Fairbanks and the Matanuska stations (Pl. V, fig. 2): Ruthenian (C. I. No. 301), New Brunswick Yellow (C. I. No. 304), Doughty (C. I. No. 308), Chippewa Flint (C. I. No. 318), Griswold (C. I. No. 328), King Flint (C. I. No. 302), Nova Scotia (C. I. No. 305), Assiniboine (C. I. No. 309), Geisner Dent (C. I. No. 319), Gehu Flint, New Brunswick White (C. I. No. 303), Howes Alberta (C. I. No. 307), Fort Peck White Flour (C. I. No. 314), and Northwestern Dent (C. I. No. 326). The earliest were New Brunswick White, New Brunswick Yellow, Howes Alberta, Assiniboine, and Fort Peck White Flour. The stalks reached a height of 4 feet, and the ears were long past the roasting stage before frost. At Matanuska, the crop did even better than was the case at Fairbanks. Some of the grain matured enough to grow, the season being favorable, and the summer warm. It is hardly reasonable, however, to expect even the earliest varieties to do equally well every year.

## POTATOES

Potatoes were a great success all over the Territory in 1923. The dry summer somewhat retarded the yield in the interior, but the quality was excellent. For some years the stations have been making experiments for the development of new varieties which will be early, dry, mealy, of good marketable size with shallow eyes, and suited to the climate of Alaska. At the Sitka station, where the work is being carried on, potatoes are being raised from seed balls, and selections made from the seedlings. Some potato seed was obtained from extreme northern States, and some was raised at Sitka, part of the latter lot being the result of cross fertilization between the different named varieties. It is reasonable to expect that seedlings, which are developed in Alaska, will be better suited to the climate than are potatoes that are brought in from outside sources; and it



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PLATE V



FIG. 1.—SOME VEGETABLES GROWN AT FAIRBANKS STATION, 1923



FIG. 2.—CORN GROWN AT FAIRBANKS STATION, 1923

is thought that the goal can be reached by raising cross-fertilized seedlings and by making rigorous selection from them.

Of the 202 seedling varieties which were grown at the station in 1923, 58 varieties were also tested at the stations at Fairbanks, Matanuska, and Rampart during the past summer. Twenty-four of the varieties which were grown at the interior stations have proved to be of superior merit, and they will be further tested under various conditions. It is of interest to note that, in a large number of instances varieties which proved to be superior at Fairbanks, for example, also proved to be superior at Rampart, a fact which would seem to indicate that their merit was not accidental. At the Sitka station 41 commercial varieties were grown in addition to those above mentioned. The few which fell behind in point of yield will be eliminated from future experiments. A critical comparison has been made of the 202 seedlings above mentioned, and 62 varieties of the lot will be grown for further test. One hundred and forty of the seedling varieties will be eliminated from further tests. New seedlings, however, have been raised and will be tested during the summer of 1924.

#### THE ORCHARD

*Apples.*—At the Sitka station a small test orchard of upward of 30 varieties of apples is of bearing age. Several of the trees bore fruit during the past season. Yellow Transparent has so far proved to be superior to all other varieties tested, and will likely gradually assume the lead for dissemination almost exclusively among the settlers. Yellow Transparent, which is an early summer apple in the States, is a fall apple in Alaska and in unfavorable seasons may not mature at all. In summers like that of 1923, however, the variety matures fruit of very fine quality. Word was received from Wrangell, Haines, and elsewhere in Alaska to the effect that Yellow Transparent trees, which had been distributed to settlers in these places, also bore good crops of decidedly palatable apples. Trees sent some years ago to Cook Inlet yielded satisfactory crops during the past season.

*Cherries.*—Some varieties of sour cherries matured during the season, but the sweet cherry is invariably a failure, even in good seasons.

*Pears and plums.*—Both pears and plums are failures. No varieties have been found so far which can be depended upon to yield crops in Alaska even in favorable years.

#### SMALL FRUIT

Currants, gooseberries, and raspberries did remarkably well everywhere in Alaska the past season.

*Raspberries*, which were introduced a few years ago at the Matanuska station, yielded an excellent crop, so much so in fact that neighbors were invited to help themselves to the fruit. All varieties do well, but Cuthbert is considered the best.

*Currants.*—The Holland (*Long-Bunched Holland*) has so far proved to be the best variety tested. Other varieties, including red, black, and white sorts, however, do exceedingly well in all sections of Alaska where they have been tried.

*Gooseberries* are being tested at all the stations, but only on a small scale, because they are not propagated as readily as are currants.

The varieties Whitesmith, Columbia, and Red Jacket are among the best so far tested.

*Strawberries.*—The Sitka hybrid strawberries are proving to be a pronounced success wherever tried. (Pl. VI, fig. 1.) Their chief claim to merit is the fact that they are hardy in the interior, where commercial sorts from the States invariably winterkill. The hybrids carry a percentage of the blood of the wild Alaska berries (*Fragaria chilensis*) of the coast region, or of *F. platypetala* of the interior, a fact which undoubtedly accounts for their hardiness. Strawberry plants are now freely distributed by the stations to settlers desiring them, and the demand for the plants is increasing. The question of strawberry growing in all parts of Alaska has been definitely answered in the affirmative. Hybridization work is being continued at Sitka, and some seed from northern Europe will be sown in the hope of raising plants for use in cross-fertilization.

#### THE NURSERY

The Sitka station has for some years maintained a small nursery for the purpose of propagating fruit trees, fruit bushes, and ornamental plants for distribution among the settlers. The distributions are made free of charge and franked through the mail in packages not exceeding 4 pounds in weight. In the fall of 1923, 1,243 apple trees (5 varieties), 2,258 gooseberry plants (17 varieties), 2,843 currant bushes (23 varieties), and 2,992 ornamental plants (19 varieties) were taken up and made available for distribution in the spring of 1924. Raspberry bushes are furnished for the asking.

Owing to the length of time required to send plants from the Sitka station to interior points, it is highly desirable to establish at Matanuska a nursery similar to that at Sitka. Stock could then be distributed from the interior station. Plans are under way for starting such a nursery in 1924. Fruit bushes and ornamental plants of all kinds are very much appreciated by all settlers, and the stations are doing what they can to meet the demands for stock.

#### FLOWERS

Although the Alaska stations do not specialize in flower growing, certain sorts, as for instance tulips and daffodils, will likely be grown for experimental purposes. In the fall of 1923 the Office of Horticultural Investigations, Bureau of Plant Industry, from stock grown at the plant introduction garden at Bellingham, Wash., furnished the Sitka station with nearly 10,000 bulbs of these flowers with a view to testing out the possibility of their growing in Alaska. Tulips and daffodils are successfully grown in some parts of Washington State, and it is confidently hoped that they can be grown in southeastern Alaska.

The gladiolus is another bulbous plant that has recently attracted much attention at the stations. Some varieties, obtained and grown in the season of 1923, were a great success, and it is planned to grow the bulbs for general distribution.

The ordinary annual flowers, which are raised from seed everywhere in the States, are successfully grown in all parts of Alaska.

#### AGRICULTURAL SURVEY AND COOPERATIVE WORK

As a preliminary step in the inauguration of cooperative experimental work with farmers, the stations made a survey of the home-



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PLATE VI



FIG. 1.—STRAWBERRY GROWING AT ANCHORAGE



FIG. 2.—CLEARING LAND AT MATANUSKA STATION



steads that are located in the five leading agricultural districts of Alaska; that is, in the Tanana and Matanuska Valleys, Anchorage, Kachemak Bay, and Kodiak Island. (Pls. VII, VIII and IX.) It was deemed necessary to make the acquaintance of a large number of homesteaders to learn something of their plans and views relative to the introduction of improved varieties of grain and other crops that are grown at the stations. Crops, superior to those now grown, will gradually be introduced into each district, where they will be grown in cooperation with the more wide-awake settlers. The best methods of farm management will be demonstrated, and advice given concerning the erection of buildings and the purchase of livestock and equipment. A representative from the stations personally visited each homestead that is accessible, and gathered the following data concerning them: Two hundred and eighty-one homesteads were found occupying an area of 59,320 acres. Of this area, 3,283 acres were under cultivation. One hundred and twenty-five acres were in wheat, from which 1,656 bushels were threshed; 1,211 acres were in oats, yielding 2,479 bushels of seed grain and 794 tons of oat hay; 177 acres were in barley, yielding 1,959 bushels of seed and 96 tons of hay; 24 acres were in peas, yielding 192 bushels and 24 tons of pea hay; and 250 acres were in potatoes, yielding 23,000 bushels. One hundred and eleven farms maintained 208 horses or mules; 48 farms, 299 cattle; 32 farms, 423 hogs; 17 farms, 133 goats and 466 sheep; and 67 farms, 6,584 chickens. Nearly every homestead had its own garden, and some 200 acres were seeded to tame grasses, clovers, and alfalfa.

In addition to the homesteads already mentioned, 105 homesteads, which are located in the Matanuska Valley, could not be visited because of the absence of their owners, who were temporarily engaged in work elsewhere. Cooperative grain-growing work was undertaken with eight farmers under diversified conditions. The survey disclosed the fact that there are excellent homesteading lands in desirable locations for newcomers. The towns of Fairbanks and Anchorage are the largest consumers of farm products, but the gold and coal mines, which are scattered over wide areas centering at Fairbanks and Anchorage, also afford excellent markets for local farm products. In order to learn what the possibilities are for developing markets, a thorough canvas was made in the town of Anchorage concerning the importations by local merchants of products that can be raised on the farms. The following data give the result of the survey:

*Farm products shipped from the States to the Anchorage market in 1923*<sup>1</sup>

Article	Quantity	Price	Article	Quantity	Price
	<i>Tons</i>			<i>Tons</i>	
Flour (hard wheat).....	115	\$11,500	Mutton.....	123 <sup>2</sup>	\$5,750
Flour (soft wheat and blends).....	216 <sup>3</sup> <sub>2</sub>	17,320	Poultry.....	9	7,600
Flour (whole wheat and graham).....	28 <sup>3</sup> <sub>4</sub>	2,443	Hay.....	437	18,740
Butter.....	62	55,800	Oats.....	230	11,960
Ham (cured).....	37 <sup>3</sup> <sub>4</sub>	22,650	Barley.....	27	1,296
Bacon (cured).....	31	24,800	Mill feed.....	104	5,200
Potatoes.....	225	11,250	Chicken feed.....	35 <sup>1</sup> <sub>2</sub>	1,775
Roots.....	35	2,800	Milk.....	27,919	35,645
Vegetables.....	161 <sup>1</sup> <sub>2</sub>	1,320	Eggs.....	25,605	78,470
Beef (fresh).....	60	20,400			
Pork (fresh).....	18	6,840			343,559

<sup>1</sup> These figures are from the merchants of Anchorage, and do not include those for products purchased from the States by the Alaskan Engineering Commission and the Alaska Road Commission.

<sup>2</sup> Cases.

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PLATE VII



FIG. 1.—BEGINNING A HOMESTEAD. J. W. FELTON'S HOMESTEAD,  
MATANUSKA VALLEY



FIG. 2.—NATURAL MEADOWS. R. P. NEILSEN'S HOMESTEAD,  
KACHEMAK BAY, COOK INLET

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PLATE VIII



FIG. 1.—DAIRY HERD OF E. WHITWELL, ANCHORAGE

FIG. 2.—TRUCK GARDEN AT ANCHORAGE CONTAINING 14,000 CABBAGE,  
19,000 CELERY, AND 15,000 LETTUCE PLANTS



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PLATE IX



FIG. 1.—ANGORA GOATS AT TOM HUNT'S HOMESTEAD, MATANUSKA VALLEY



FIG. 2.—WINTER AND BERGSTROM HOMESTEAD, MATANUSKA VALLEY



## LIVESTOCK

## CATTLE

*Galloway-Holstein crosses.*—As has been explained in former reports, reciprocal crosses are being made between purebred Galloways and Holstein-Friesians in the hope of obtaining a hardy dairy cattle for Alaska. It is desired to produce a breed combining the sturdiness and rustling qualities of the Galloways with the milking qualities of the Holstein-Friesians. Several crossbred cows were in milk during the present winter, but so far none has proved to be a phenomenal milker. In yield and butterfat content of milk, the cows are intermediate between the Galloways and the Holsteins. The Galloway is prepotent in transmitting its color and hornless characteristics, but the Holstein-Friesian transmits its rangy body, thin neck, and short hair. (Pl. X, figs. 1 and 2.) On December 31, 1923, there were in the herd at Kodiak 7 crossbred cows ranging from 3 to 6 years old, 4 yearling heifers, and 5 heifer calves, and there were on hand one 2-year old crossbred bull and one crossbred bull calf. The number of bull calves dropped exceeded the number of heifer calves by considerable, and since it is impracticable to keep so many bulls for three or four years before selecting from them, 15 crossbred bull calves were castrated and sold for beef. The cross-breeding experiment is well under way, but it will take 10 to 12 years' work to know whether a breed possessing the characteristics desired has been established.

*Galloways.*—On December 31 the station had 2 bulls, 2 mature cows, 5 heifers ranging from 1 to 3 years, and 1 bull calf belonging to the Galloway breed. It has been necessary to reduce this herd greatly in order to maintain the station on the appropriation allowed by Congress and at the same time develop the other stations. No effort, therefore, is being made to increase the herd except for the production of animals needed for cross-breeding work. The aged herd bull, Ranger of Seven Oaks, will be discarded during the coming year, and a fine yearling bull, which was brought from a herd of good repute in Canada last fall, will take his place.

*Holstein-Friesians.*—On December 31, 1923, the station owned 1 bull, 3 mature cows, 1 heifer, and 1 heifer calf of this breed. Shadford Segis Hartog 2d, which now heads the Holstein herd, is of very superior breeding, and it is confidently expected that he will transmit milking qualities to the crossbreds. The Holsteins as a breed are not well adapted to the cold, rainy climate of southwestern Alaska. They do not range in bad weather like the Galloways and the crossbred stock. Unlike the Galloways and crossbred cattle, too, they seek shelter in storms. While the Holstein-Friesians are a superior dairy breed in the States, they can scarcely be recommended as suitable for Alaska. The climate is too severe for them.

*Tuberculosis control.*—A bulletin<sup>2</sup> on the eradication of tuberculosis at the station was published during the year. It is gratifying to be able to report that the herd was again tested during the summer and that none of the animals reacted or could be classed as suspicious. The same is true also of the Shorthorns at the Matanuska station.

<sup>2</sup> Alaska Stas. Bul. 5, Eradication of tuberculosis in cattle at the Kodiak Experiment Station.

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PLATE X



FIG. 1.—CROSSBRED HOLSTEIN-GALLOWAY COW No. 1, KODIAK STATION



FIG. 2.—CROSSBRED HOLSTEIN-GALLOWAY COW No. 3, KODIAK STATION

*Milking Shorthorns.*—The Milking Shorthorn breed was introduced at the Matanuska station because it appeared to be better adapted to Alaska than did any of the distinct dairy breeds. The cattle have done well and have thrived in the interior climate, and farmers and settlers who have seen them are much pleased with them. At the close of the year there were on hand at Matanuska 5 cows, 4 heifers, 1 bull, and 2 bull calves. Starlight 7th, the best cow in the herd, died during the summer as the result of a tumorous growth in the windpipe. All the others continue to be in good health. King Conjuror, the former herd sire, was transferred to Fairbanks station for the purpose of grading up the cows of the farmers, and Waterloo Heir, the bull which was formerly at Fairbanks, was transferred to Matanuska to head the Shorthorn herd. One bull calf was sold for breeding purposes and two bull calves were vealed.

#### YAK

Last September the Alaska stations obtained from the Canadian Government two female yak, one of which had a bull calf at side. The animals were placed with a Galloway bull at the Fairbanks station in the hope of obtaining crossbred Galloway yak bovines which it is expected will be almost as hardy as the moose. The yak bull, obtained from the same source two years ago, has in like manner been placed with two young Galloway cows. No crossbred calves have been dropped at this writing, but some are in prospect. The Canadian Government has also taken up the crossbreeding of yak and domestic cattle at the Wainwright National Park in Alberta. (Pl. XI, figs. 1 and 2.)

#### SHEEP

All the sheep of the stations, consisting of 12 ewes, 2 ewe lambs, and 1 ram which was recently purchased for service, are now at Matanuska. The ram which was purchased in the fall of 1922 proved to be a poor breeder, begetting only the 2 lambs mentioned. The station, having as yet no facilities for maintaining a large flock, sold 13 ewes during the year to Matanuska farmers for breeding purposes.

#### HOGS

Two purebred Hampshire sows and one purebred Hampshire boar are kept at the Fairbanks station. (Pl. XII, fig. 1.) The litters were sold to farmers for breeding purposes. (Pl. XII, fig. 2.)

#### FAIR EXHIBITS

The Alaska stations made very creditable exhibits at fairs in Fairbanks and Anchorage and at the Seattle Chamber of Commerce. Exhibits from the Matanuska and the Sitka stations were sent to Seattle at the request of the Seattle Chamber of Commerce, and a similar exhibit was made at Juneau at the request of the Southeastern Alaska Fair Association. The display made at the Juneau Fair was pronounced by far the best and was awarded a certificate of merit. The station exhibits do not compete for prizes with the exhibits that are made by individual ranchers and truck gardeners.



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PLATE XI



FIG. 1.—YAK HERD, WAINWRIGHT NATIONAL PARK, ALBERTA, CANADA



FIG. 2.—TWO HEIFER CATTLEYAK. DAM LYING DOWN, YAK SIRE IN BACKGROUND. WAINWRIGHT NATIONAL PARK

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PLATE XII



FIG. 1.—HAMPSHIRE SOWS, FAIRBANKS STATION



FIG. 2.—HAMPSHIRE PIGS, TANANA VALLEY

### BUILDINGS

A silo was constructed at Kodiak during the year, and the cottage, transferred last year from Kodiak to Matanuska, was completed. The root cellar at the Fairbanks station also was completed, and repairs were made to all the buildings needing them. At the Kodiak station  $3\frac{1}{2}$  miles of fence was built, and 3 miles of old fence repaired. At Fairbanks, 240 rods of new fence was built and 250 rods of old fence repaired.

### CLEARING LAND

Five acres of stump were blasted and burned at the Kodiak station, and 15 acres more were slashed preparatory to clearing. Fourteen acres were cleared and brought under cultivation at Matanuska, and 8 acres additional were slashed and partly burned. (Pl. VI, fig. 2.) At the Fairbanks station,  $5\frac{1}{4}$  acres were cleared. The cost of clearing by day labor at \$6.40 per day was \$84 per acre.

### NEEDS OF THE STATIONS

Funds are needed to pay for clearing 100 acres at Matanuska, 50 acres at Kodiak, and 50 acres at Fairbanks. This land should be put in condition for raising feed for livestock. Freight rates on imported feeds are excessively high. Feed is the foundation of animal industry, which in turn is the foundation of successful agriculture among settlers in Alaska.

Due to the lack of funds needed to secure proper equipment for carrying on work of a scientific nature, the stations have had to confine their efforts to meeting pioneer conditions. Scientific investigations should be undertaken at once along chemical, botanical, entomological, and bacteriological lines. Buildings are needed for this work, together with laboratory equipment and funds to pay for the employment of specialists. Alaska can be made self-supporting. There is absolutely no need of purchasing a million dollars' worth of foodstuffs from the States when the same articles can be produced in Alaska. The stations have demonstrated that this can be done. Efforts should, therefore, be made to facilitate settlement and stimulate the development of agriculture in the Territory.

### WEATHER REPORTS

A summary of the meteorological data is submitted with this report. The figures are self-explanatory. A study of these data will enable anyone to get a fairly good idea of the climatic conditions in various sections of the Territory.



*Condensed meteorological reports for 1923*<sup>1</sup>

AKULURAK. Latitude, 62° 30'; longitude, 164° 25'. Brother Murphy, S. J., observer

Month	Temperature					Total pre- cipitation	Number of days—			
	Maxi- mum	Mini- mum	Mean maxi- mum	Mean mini- mum	Month- ly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	Inches				
January.....	33	-35	10.3	-8.6	0.8	-----	-----	9	5	17
February.....	37	-21	17.2	4.2	10.7	-----	-----	11	9	7
March.....	33	-18	22.2	6.3	14.2	-----	-----	2	9	16
April.....	38	-4	28.5	15.3	21.9	-----	-----	8	7	14
May.....	53	19	40.9	28.4	34.6	-----	-----	9	8	10
June.....	66	35	54.2	42.6	48.4	1.15	-----	2	6	15
July.....	76	38	60.7	47.5	54.1	1.09	6	9	8	13
August.....	77	43	60.0	48.7	54.4	2.18	7	7	12	12
September.....	61	23	48.2	39.1	43.6	4.76	17	1	13	16
October.....	52	23	38.0	30.9	34.4	1.71	10	1	8	22
November.....	35	-1	24.5	17.2	20.8	.02	1	3	13	14
December.....	34	-28	4.7	-6.4	-1.8	-----	-----	7	10	14

<sup>1</sup> Those reports for which no name is given were supplied by the Weather Bureau of the Department of Agriculture.

ALLAKAKET. Latitude, 66° 34'; longitude, 152° 44'. Muriel Alice Thayer, observer

January.....	30	-69	-10.5	-31.5	-21.0	0.76	10	17	1	13
February.....	36	-54	7.8	-16.4	-4.3	1.79	7	14	2	12
March.....	30	-55	11.5	-18.9	-3.7	1.80	6	15	3	13
May.....	66	-11	52.7	28.5	40.6	.81	4	13	8	10
June.....	88	31	73.0	43.0	58.0	1.61	5	5	8	17
July.....	90	33	75.9	45.1	60.5	1.10	7	17	1	13
August.....	83	28	74.5	41.9	58.2	1.58	4	18	3	10
September.....	64	18	50.1	32.2	41.2	3.03	18	5	6	19
October.....	55	-2	39.4	20.7	30.0	.81	6	10	3	18
November.....	26	-43	8.2	-11.3	-1.6	.05	1	21	0	9
December.....	19	-47	-12.5	-32.1	-22.3	.18	2	22	0	9

ANCHORAGE. Latitude, 61° 13'; longitude, 149° 52'. Weather Bureau, observer

January.....	41	-17	17.0	-0.5	8.2	1.61	11	10	5	16
February.....	45	-4	30.4	12.3	21.4	.79	9	12	5	11
March.....	42	-13	32.5	12.2	22.4	.78	7	12	3	16
April.....	54	20	44.4	28.6	36.5	.35	6	8	5	17
May.....	67	26	55.6	36.7	46.2	.08	3	8	7	16
June.....	67	38	61.0	45.2	53.1	.61	4	3	7	20
July.....	74	45	67.2	51.8	59.5	1.70	6	10	5	16
August.....	82	42	67.6	50.8	59.2	.89	10	7	10	14
September.....	64	24	55.0	42.5	48.8	5.09	22	3	3	24
October.....	60	29	47.1	36.4	41.8	1.72	14	3	4	24
November.....	40	5	31.9	21.7	26.8	1.03	10	7	6	17
December.....	27	-10	17.1	5.8	11.4	.52	6	5	5	21

BARROW. Latitude, 71° 23'; longitude, 156° 17'. Weather Bureau, observer

January.....	21	-47	-17.4	-30.8	-24.1	-----	-----	26	0	5
February.....	31	-48	-4.7	-23.8	-14.2	-----	7	11	7	10
March.....	11	-52	-11.5	-30.5	-21.0	0.43	3	18	6	7
April.....	27	-23	6.9	-9.8	-1.4	.36	4	9	6	15
May.....	38	-12	29.0	14.0	21.5	.65	5	8	2	21
June.....	56	23	38.2	30.0	34.1	.16	3	2	6	22
July.....	65	27	48.0	34.5	41.2	.53	8	7	11	13
August.....	73	31	49.2	38.1	43.6	.31	6	5	9	17
September.....	43	7	32.2	24.2	28.2	.49	7	0	8	22
October.....	32	3	24.5	16.6	20.6	1.07	12	0	2	29
November.....	26	-22	8.0	-2.7	3.4	.50	9	5	9	16
December.....	32	-48	-14.5	-28.9	-21.7	.37	4	18	7	6

*Condensed meteorological reports for 1923—Continued*

CALDER. Latitude, 56° 10'; longitude, 133° 27'. John McCalum, observer

Month	Temperature					Total pre- cipita- tion	Number of days—			
	Maxi- mum	Mini- mum	Mean maxi- mum	Mean mini- mum	Month- ly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	Inches				
January.....	39	6	33.6	25.4	29.5	6.18	16	7	3	21
February.....	47	9	37.9	26.9	32.4	12.75	19	6	7	15
March.....	59	19	41.4	30.2	35.8	9.17	27	4	5	22
April.....	59	22	49.9	32.7	41.3	9.40	19	7	4	19
May.....	68	28	57.1	37.4	47.2	6.78	16	6	7	18
June.....	78	34	62.3	42.4	52.4	2.14	5	14	4	12
July.....	80	38	66.3	46.2	56.2	1.48	8	16	4	11
August.....	83	39	68.6	49.2	58.9	6.77	13	17	1	13
September.....	74	31	59.7	43.5	51.6	21.85	22	10	1	19
October.....	63	30	53.0	39.3	46.2	13.63	18	7	3	21
November.....	60	24	46.3	34.5	40.4	23.69	23	2	3	25

CANDLE. Latitude, 65° 55'; longitude, 161° 57'. F. M. Warsing, observer

January.....	31	-47	-0.1	-20.4	-10.2	0.51	9	12	9	10
February.....	38	-38	9.4	-9.0	0.2	.19	3	19	5	4
March.....	39	-42	13.7	-6.6	3.6	.35	4	11	9	11
April.....	41	-24	26.6	1.4	14.0	.50	6	15	8	7
May.....	61	0	44.8	25.9	35.4	-----	-----	14	9	8
June.....	71	27	58.5	36.8	47.6	-----	-----	12	7	11
July.....	77	24	65.7	44.1	54.9	-----	-----	13	10	8
August.....	78	26	68.4	45.0	56.7	-----	-----	17	5	9
September.....	68	12	49.9	32.4	41.2	-----	-----	6	5	19
October.....	49	4	34.2	21.9	28.0	-----	-----	3	7	21
November.....	38	-18	30.1	2.8	16.4	-----	-----	19	5	6
December.....	30	-40	-3.0	-20.6	-11.8	-----	-----	28	1	2

CHICKALOON. Latitude, 61° 48'; longitude, 148° 27'. Archie Lingo, observer

January.....	34	-21	12.7	-5.4	3.6	1.39	6	18	3	10
February.....	44	-10	28.8	11.5	20.2	.60	5	11	4	13
March.....	44	-14	30.6	5.0	17.8	1.14	5	17	5	9
April.....	53	14	45.0	24.5	34.8	.10	1	6	16	8
May.....	67	23	58.1	35.5	46.8	0	0	5	12	14
June.....	77	27	65.8	41.3	53.6	.34	3	8	18	3
July.....	86	36	70.8	46.8	58.8	1.55	8	10	12	9
August.....	89	35	72.0	44.7	58.4	.73	6	17	7	7
September.....	68	21	54.7	36.4	45.6	5.20	18	5	12	13
October.....	58	23	47.0	32.5	39.8	1.10	12	8	7	16
November.....	36	-5	29.5	15.1	22.3	.70	5	13	10	7
December.....	23	-18	14.2	-2.1	6.0	.35	1	18	4	9

CHITINA. Latitude, 61° 32'; longitude, 144° 27'. A. G. Morey, observer

January.....	36	-46	-1.2	-17.5	-9.2	0.60	5	7	15	9
February.....	45	-22	21.4	3.2	12.3	1.55	7	16	5	7
March.....	41	-19	28.4	4.2	16.3	1.00	10	19	4	8
April.....	55	0	46.1	23.2	34.6	.16	3	13	13	4
May.....	67	22	58.6	36.0	47.3	.49	5	15	12	4
June.....	80	33	67.6	44.7	56.2	.08	2	22	7	1
July.....	88	41	76.0	50.5	63.2	.36	3	23	6	2
August.....	88	40	70.2	46.7	58.4	.32	5	12	16	3
September.....	78	20	53.4	37.8	45.6	3.28	17	6	12	12
October.....	56	23	44.5	33.9	39.2	.78	7	5	19	7
November.....	41	-5	29.5	14.7	20.6	2.18	11	8	8	14
December.....	11	-29	-1.0	-15.9	-8.4	.61	5	12	11	8

*Condensed meteorological reports for 1923—Continued*

CORDOVA. Latitude, 60° 32'; longitude, 145° 42'. Weather Bureau, observer

Month	Temperature					Total pre- cipita- tion	Number of days—			
	Maxi- mum	Mini- mum	Mean maxi- mum	Mean mini- mum	Month- ly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	Inches				
January.....	37	2	30.1	15.9	23.0	3.46	10	15	5	11
February.....	50	12	38.6	25.8	32.2	7.54	15	14	4	10
March.....	45	9	39.7	22.6	31.2	5.54	13	18	3	10
April.....	52	23	44.4	30.5	37.4	12.50	16	11	5	14
May.....	58	28	52.5	37.4	45.0	3.21	15	6	11	14
June.....	68	37	58.4	45.8	52.1	6.81	13	6	7	17
July.....	75	46	63.9	50.7	57.3	12.55	7	10	6	15
August.....	79	45	64.6	51.6	58.1	2.69	12	9	7	15
September.....	66	31	56.0	44.2	50.1	34.19	22	5	7	18
October.....	62	33	50.2	41.3	45.8	37.04	29	3	7	21
November.....	49	25	41.7	34.5	38.1	27.09	28	3	3	24
December.....	40	12	32.1	22.7	27.4	6.46	19	9	5	17

DILLINGHAM. Latitude, 59°; longitude, 158° 28'. W. N. Reed, observer

January.....	36	-18	20.5	5.1	12.8	3.26	5	6	6	19
February.....	38	-7	25.6	16.8	21.2	1.93	7	12	5	11
March.....	38	-10	29.7	18.1	23.9	4.88	9	2	8	21
April.....	43	7	36.1	26.2	31.2	2.14	8	5	10	15
May.....	58	25	48.4	33.0	40.7	1.06	2	9	7	15
June.....	65	34	56.4	41.2	48.8	1.63	6	5	5	20
July.....	82	40	65.6	47.2	56.4	1.20	5	12	9	10
August.....	81	41	66.9	51.8	59.4	3.49	11	6	11	14
September.....	70	26	56.0	39.3	47.6	4.85	10	9	6	15
October.....	59	27	48.5	34.0	41.2	3.10	7	8	11	12
November.....	45	9	38.4	22.2	30.3	.35	3	21	4	5
December.....	40	-21	18.0	2.5	10.2	-----	-----	22	2	7

DUTCH HARBOR. Latitude, 53° 55'; longitude, 166° 30'. Naval Radio Service, observer

January.....	45	20	37.6	27.5	32.6	5.58	-----	-----	-----	-----
February.....	48	12	35.5	27.3	31.4	7.80	-----	-----	-----	-----
March.....	46	22	41.4	31.6	36.5	2.29	15	-----	-----	-----
April.....	48	20	39.8	30.8	35.3	7.13	25	-----	-----	-----
May.....	58	26	46.2	35.7	41.0	3.89	9	-----	-----	-----
June.....	58	34	50.6	40.5	45.6	4.34	4	-----	-----	-----
July.....	75	40	55.5	49.9	50.0	2.47	7	-----	-----	-----
August.....	74	44	58.8	47.9	53.4	2.82	9	-----	-----	-----
September.....	64	34	54.2	43.0	48.6	3.70	11	-----	-----	-----
October.....	50	26	45.0	36.4	40.7	10.42	13	-----	-----	-----
November.....	45	24	41.9	31.5	36.7	3.88	9	-----	-----	-----
December.....	44	10	36.1	25.2	30.6	-----	-----	-----	-----	-----

EAGLE. Latitude, 64° 46'; longitude, 141° 12'. Weather Bureau, observer

January.....	14	-52	-10.5	-27.4	-19.0	0.19	7	12	4	15
February.....	33	-38	9.9	-5.3	2.3	.87	11	7	3	18
March.....	36	-43	19.0	-5.3	6.8	.44	9	12	5	14
April.....	53	1	42.5	18.4	30.4	.22	4	9	6	15
May.....	70	4	58.3	30.6	44.4	.54	7	11	7	13
June.....	91	36	73.4	36.9	55.2	2.67	18	13	3	14
July.....	90	37	77.7	46.7	62.2	.66	9	15	5	11
August.....	87	32	76.2	43.3	59.8	.75	5	17	7	7
September.....	72	22	54.9	35.1	45.0	1.25	11	2	4	24
October.....	66	5	47.9	27.8	37.8	.10	2	12	8	11
November.....	35	-45	19.8	4.7	15.1	.74	7	5	6	19
December.....	3	-56	-13.5	-30.0	-21.8	.36	9	11	6	14



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FAIRBANKS. Latitude, 64° 51'; longitude, 147° 52'. Weather Bureau, observer

Month	Temperature					Total pre- cipitation	Number of days—			
	Maxi- mum	Mini- mum	Mean maxi- mum	Mean mini- mum	Month- ly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	Inches				
January.....	38	-47	-1.2	-20.5	-10.8	1.17	11	16	4	11
February.....	35	-23	16.5	-1.9	7.3	.90	10	9	5	14
March.....	46	-29	24.0	-3.7	10.2	.78	10	11	4	16
April.....	54	6	43.8	18.7	31.2	.02	1	12	5	13
May.....	76	9	61.3	34.8	48.0	1.25	11	16	2	13
June.....	87	31	71.9	44.8	58.4	1.57	11	9	7	14
July.....	91	40	78.3	47.3	62.8	.41	6	19	4	8
August.....	90	39	76.5	45.8	61.2	.85	7	18	4	9
September.....	72	18	56.0	34.9	45.4	1.55	13	3	4	23
October.....	62	8	48.1	28.4	38.3	.09	1	5	8	18
November.....	39	-30	18.6	2.0	10.3	.61	5	17	5	8
December.....	11	-40	-9.9	-24.5	-17.2	.17	3	19	6	6

FORTMAN HATCHERY. Latitude, 55° 36'; longitude, 131° 25'. Fred Patching, observer

January.....	40	-4	32.7	21.8	27.2	11.31	19	3	2	26
February.....	45	4	37.9	25.5	31.7	17.53	20	5	3	20
March.....	62	19	43.5	29.8	36.6	14.09	24	4	3	24
April.....	60	24	53.0	33.0	43.0	12.97	16	7	4	19
May.....	71	30	59.1	38.4	48.8	8.50	19	5	9	17
June.....	89	39	71.1	46.3	58.7	2.23	8	13	8	9
July.....	87	44	72.4	51.3	61.8	2.05	10	7	6	18
August.....	84	46	73.7	52.9	63.3	9.61	14	12	6	13
September.....	77	35	61.9	46.7	54.3	16.55	21	4	3	23
October.....	72	25	55.4	41.0	48.2	10.77	22	6	6	19
November.....	58	27	46.2	37.0	41.6	26.63	26	0	6	24
December.....	49	4	37.2	28.9	33.0	25.53	26	3	3	25

FORT YUKON. Latitude, 66° 34'; longitude, 145° 18'. Miss Winifred Dalziel and Weather Bureau, observers

January.....	30	-65	-21.8	-40.2	-31.0	0.21	5	14	6	11
February.....	37	-41	4.9	-15.5	-5.3	1.43	6	10	1	17
March.....	34	-48	11.5	-14.3	-1.4	.26	3	13	8	10
April.....	50	-14	33.4	4.7	19.0	.55	6	14	2	14
October.....	61	0	38.6	20.3	29.4	.20	1	15	5	11
November.....	28	-49	7.5	-9.6	-1.6	.14	3	11	4	15
December.....	-6	-55	-23.6	-34.6	-2.91	.02	2	12	5	14

HOLY CROSS. Latitude, 62° 16'; longitude, 159° 50'. Sister Mary Alberic, observer

January.....	38	-38	10.2	-10.2	-----	-----	4	10	17
February.....	41	-16	22.2	8.6	15.4	2.82	11	10	12
March.....	39	-29	23.5	6.8	15.2	-----	12	12	11
April.....	53	-9	37.2	20.1	28.6	.40	4	9	16
May.....	65	22	51.9	32.5	42.2	.58	4	11	8
June.....	73	33	61.8	44.4	53.1	.97	8	11	9
July.....	84	39	69.4	49.4	59.4	1.92	10	19	8
August.....	79	41	68.5	50.1	59.3	2.03	12	19	9
September.....	69	17	51.1	38.3	44.7	3.63	21	12	12
October.....	58	18	41.9	31.4	36.6	1.40	16	1	23
November.....	38	-10	24.4	13.9	19.6	.43	3	2	15
December.....	39	-40	-1.1	-16.2	-8.6	1.08	6	1	15

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JUNEAU. Latitude, 58° 18'; longitude, 134° 24'. Weather Bureau, observer

Month	Temperature					Total pre- cipita- tion	Number of days—			
	Maxi- mum	Mini- mum	Mean maxi- mum	Mean mini- mum	Month- ly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	Inches				
January.....	38	12	30.1	22.9	26.5	5.16	21	7	1	23
February.....	45	9	36.9	27.8	32.4	13.39	18	5	5	18
March.....	48	14	37.7	27.9	32.8	7.95	22	4	7	20
April.....	57	28	48.4	35.0	41.7	5.44	18	5	5	20
May.....	67	32	56.7	39.7	48.2	3.24	19	6	5	20
June.....	80	40	63.9	45.4	54.6	1.43	9	7	6	17
July.....	82	47	68.1	50.8	59.4	4.10	13	9	8	14
August.....	87	46	67.4	50.4	58.9	6.86	13	10	6	15
September.....	65	35	55.8	45.4	50.6	16.46	24	5	4	21
October.....	63	30	51.0	41.1	46.0	8.66	24	5	2	24
November.....	64	27	44.9	36.6	40.8	11.71	27	3	0	27
December.....	46	9	35.4	28.5	32.0	13.13	27	2	2	27

KAKE. Latitude, 56° 59'; longitude, 133° 57'. Will A. Barrows, observer

January.....	49	10	38.2	25.8	32.0	2.84	16	7	11	13
February.....	49	6	39.5	28.8	34.2	4.98	14	8	8	12
March.....	52	16	41.1	30.3	35.7	2.88	10	8	12	11
April.....	62	29	47.1	34.7	40.9	2.54	13	9	11	10
May.....	61	33	50.6	36.7	43.6	1.78	11	12	12	7
June.....	44	44	46.6	46.6	46.6	.18	4	15	13	2
July.....	74	44	63.0	47.0	55.4	.62	5	16	8	7
August.....	75	45	67.0	50.0	58.5	6.42	10	14	6	11
September.....	72	32	60.8	43.5	52.2	6.59	12	6	13	11
October.....	65	16	55.7	38.3	47.0	3.28	11	8	9	14
November.....	60	13	53.6	33.9	43.8	4.91	19	2	7	21
December.....	54	11	44.0	29.3	36.6	7.67	23	3	2	26

KATALLA. Latitude, 60° 11'; longitude, 144° 34'. Mrs. B. H. White, observer

January.....						4.70	15	8	7	16
February.....						4.76	18	8	1	19
March.....	47	8	38.2	24.2	31.2	2.70	11	14	4	13
April.....	52	23	44.1	31.0	37.6	4.99	13	11	5	14
May.....	64	31	52.1	37.9	45.0	3.30	17	7	7	17
June.....	72	36	59.0	44.3	51.6	2.72	11	10	7	13
July.....	73	41	63.6	49.0	56.3	5.55	12	6	10	15
August.....	78	45	65.1	50.4	57.8	2.47	12	7	6	18
September.....	67	31	55.9	43.4	49.6	14.18	19	4	3	23
October.....	62	29	50.3	40.8	45.6	16.07	27	0	1	30
November.....	49	20	43.1	33.3	38.2	19.06	28	0	2	28
December.....	45	8	33.5	22.0	27.8	5.38	18	4	4	23

KETCHIKAN. Latitude, 55° 20'; longitude, 131° 37'. A. P. Craig, observer

January.....	43	11	35.8	27.2	31.5	10.76	25	9	0	22
February.....	50	8	39.7	28.8	34.2	18.53	20	10	2	16
March.....	60	25	43.6	31.9	37.8	17.32	28	8	7	16
April.....	61	26	51.6	35.6	43.6	13.23	18	9	3	18
May.....	65	33	56.7	40.3	48.5	11.37	21	10	8	13
June.....	85	40	68.5	46.3	57.4	3.32	16	16	9	5
July.....	88	46	68.3	51.3	59.8	2.34	16	13	10	8
August.....	82	47	69.8	52.5	61.2	15.07	18	15	3	13
September.....	79	36	60.7	47.5	54.1	11.88	23	6	7	17
October.....	72	28	56.6	41.9	49.2	14.85	28	9	8	14
November.....	62	28	47.9	39.2	43.6	31.23	30	1	4	25
December.....	49	12	40.1	31.3	35.7	22.80	26	6	5	20

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KODIAK. Latitude, 57° 48'; longitude, 152° 22'. W. T. White, observer

Month	Temperature					Total pre- cipita- tion	Number of days—			
	Maxi- mum	Mini- mum	Mean maxi- mum	Mean mini- mum	Month- ly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	Inches				
January.....	44	18	37.2	26.2	31.7	2.42	13	11	6	14
February.....	60	8	39.5	29.1	34.3	5.08	20	6	10	12
March.....	46	10	39.6	29.5	34.6	2.09	11	8	8	15
April.....	49	21	42.5	32.8	37.6	4.06	12	8	14	8
May.....	57	31	48.9	38.1	43.5	4.28	21	7	7	17
June.....	68	40	54.0	42.9	48.4	7.65	13	9	8	13
July.....	74	43	63.1	48.9	56.0	1.31	11	11	9	11
August.....	68	45	61.7	51.4	56.6	5.23	16	6	6	19
September.....	67	37	57.6	44.9	51.2	3.53	16	3	12	15
October.....	53	34	49.7	40.4	45.0	12.22	26	5	6	20
November.....	48	25	43.5	33.8	38.6	9.03	19	4	5	21
December.....	39	11	33.5	24.0	28.8	3.02	15	10	7	14

MATANUSKA. Latitude, 61° 30'; longitude, 149° 15'. Experiment station, observer

January.....	40	-19	15.2	-3.2	6.0	1.47	8	16	3	12
February.....	59	-1	34.7	12.7	23.7	.80	5	18	2	8
March.....	43	-9	33.3	11.0	22.2	.47	5	22	3	6
April.....	63	17	47.5	28.6	38.0	.32	3	15	5	10
May.....	70	25	60.8	35.3	48.0	.21	3	16	6	9
June.....	80	35	69.2	44.0	56.6	.35	5	12	7	11
July.....	83	39	73.0	48.6	60.8	1.10	8	12	6	13
August.....	83	40	73.2	48.7	61.0	1.05	6	15	10	6
September.....	69	24	60.7	40.2	50.4	3.75	18	3	13	14
October.....	69	28	53.6	36.5	45.0	1.91	9	10	4	7
November.....	44	-5	33.5	21.0	27.2	.97	5	15	6	9
December.....	33	-15	17.2	4.8	11.0	.54	4	16	6	9

NENANA. Latitude, 64° 31'; longitude, 149° 06'. John B. Hall, observer

January.....	38	-45	0.9	-19.2	-9.2	0.78	9	15	8	8
February.....	38	-24	16.3	-8	7.8	.66	10	10	6	12
March.....	39	-31	19.6	-1.5	9.0	.54	7	16	2	13
April.....	53	1	38.5	17.9	28.2	.03	2	14	13	3
May.....	73	13	59.1	36.0	47.6	.91	8	9	15	7
June.....	87	32	71.6	49.0	60.3	1.76	6	7	13	10
July.....	90	42	81.2	50.7	66.0	-----	-----	24	4	3
August.....	88	32	82.2	47.4	64.8	.95	2	22	3	6
September.....	70	20	56.0	36.3	46.2	.80	5	5	6	19
October.....	64	11	48.7	27.6	38.2	Trace.	-----	17	3	11
November.....	40	-39	18.4	-1.5	8.4	.09	2	22	-----	8
December.....	22	-45	-9.4	-28.7	-19.0	.12	1	18	6	7

NOME. Latitude, 64° 30'; longitude, 165° 24'. Weather Bureau, observer

January.....	32	-40	8.6	-11.5	-1.4	3.70	14	16	-----	15
February.....	38	-19	20.3	5.2	12.8	.29	2	18	1	9
March.....	34	-25	20.2	4.5	12.4	1.12	7	14	-----	17
April.....	36	-6	26.8	13.9	20.4	.08	1	19	3	8
May.....	66	11	41.9	29.7	35.8	.06	2	8	-----	13
June.....	70	26	54.0	40.1	47.0	1.29	10	12	9	9
July.....	77	31	57.3	44.9	51.1	.67	9	8	7	16
August.....	69	43	60.6	49.5	55.0	2.97	18	1	11	19
September.....	62	16	49.0	39.1	44.0	4.43	17	3	8	19
October.....	54	10	37.8	28.7	33.2	.69	15	7	5	19
November.....	36	-----	24.6	15.6	20.1	.22	6	12	7	11
December.....	33	-28	4.3	-7.6	-1.6	1.58	10	16	3	12



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NOORVIK. Latitude, 66° 50'; longitude, 161°. Weather Bureau, observer

Month	Temperature					Total pre- cipitation	Number of days—			
	Maxi- mum	Mini- mum	Mean maxi- mum	Mean mini- mum	Month- ly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	Inches				
January.....	30	-53	0.1	-17.9	-8.9	1.36	11	15	5	11
February.....	32	-30	10.6	-3.6	3.5	.27	3	18	3	7
March.....	28	-30	8.4	-5.3	1.6	.71	8	13	10	8
April.....	36	-16	24.0	7.7	15.8	.50	5	13	8	9
May.....	64	5	47.3	29.7	38.5	1.77	4	12	10	9
June.....	74	30	61.8	43.6	52.7	1.33	11	5	11	14
July.....	82	36	66.9	47.4	57.2	.31	8	9	13	9
August.....	81	41	68.8	51.1	60.0	1.42	6	15	5	11
September.....	66	14	47.0	34.9	41.0	3.62	19	6	5	19
October.....	52	12	35.9	27.0	31.4	1.01	9	8	7	16
November.....	32	-20	16.4	5.4	10.9	.23	2	19	3	1
December.....	28	-37	-5.9	-18.1	-12.0	.52	4	16	5	80

NULATO. Latitude, 64° 43'; longitude, 158° 04'. Dr. H. C. Randle, observer

January.....	32	-50	0.0	-19.5	-9.8	2.90	14	12	6	13
February.....	35	-20	13.5	-1	6.7	.99	8	8	8	12
March.....	36	-33	17.0	-6	8.2	1.17	11	8	4	19
April.....	41	-11	32.2	13.5	22.8	.05	4	14	8	10
May.....	65	9	51.3	32.2	41.8	1.60	16	8	13	10
June.....	76	33	64.3	43.7	54.0	1.73	14	7	13	10
July.....	81	33	69.2	46.9	58.1	1.54	9	15	7	9
August.....	84	35	68.3	46.6	57.4	1.01	8	11	14	6
September.....	63	10	48.0	36.2	42.1	2.17	19	2	15	13
October.....	54	6	37.9	27.0	32.4	.83	11	7	6	18
November.....	31	-32	15.6	1.9	8.8	.30	3	13	4	13
December.....	26	-43	-9.1	-23.3	-16.2	.81	11	15	2	14

RAMPART. Latitude, 65° 30'; longitude, 150° 15'. E. M. Floyd, observer

January.....	35	-65	-9.3	-26.4	-17.8	1.40	12	15	1	15
February.....	40	-23	7.6	-4.3	1.6	1.26	14	6	8	13
March.....	31	-42	10.7	-9.2	.8	.60	11	11	8	12
April.....	45	-8	33.3	9.0	21.2	.14	5	12	9	9
May.....	70	4	55.7	32.5	44.1	.58	9	13	10	8
June.....	83	32	71.4	44.5	58.0	1.11	10	5	14	11
July.....	91	38	76.3	46.9	61.6	1.16	5	14	8	9
August.....	86	38	75.5	46.3	60.9	.48	6	15	9	7
September.....	61	20	48.7	34.8	41.8	1.79	18	1	8	21
October.....	56	9	34.5	23.3	28.9	.07	3	5	11	15
November.....	26	-48	10.5	-1	5.2	.54	7	6	7	17
December.....	-4	-48	-13.0	-24.7	-18.8	.20	5	8	7	16

SEWARD. Latitude, 60° 06'; longitude, 149° 37'. E. L. Sweek, observer

January.....	46	6	30.8	17.0	23.9	1.55	7	16	0	15
February.....	52	13	39.0	24.7	31.8	4.51	9	14	1	13
March.....	48	14	39.2	23.7	31.4	2.57	9	15	3	13
April.....	56	24	46.8	30.8	38.8	4.96	11	10	2	18
May.....	64	31	54.0	37.7	45.8	.98	11	12	0	19
June.....	74	36	59.0	43.6	51.3	5.69	14	10	2	18
July.....	78	43	67.0	50.2	58.6	2.47	7	16	2	13
August.....	78	43	65.4	49.0	57.2	2.04	5	11	4	16
September.....	68	28	55.5	42.6	49.0	16.04	20	7	0	23
October.....	60	33	48.7	39.2	44.0	33.17	31	0	0	31
November.....	47	20	40.5	30.8	35.6	6.20	15	6	0	24
December.....	38	4	29.0	16.9	23.0	5.38	9	2	1	28

*Condensed meteorological reports for 1923—Continued*

SKAGWAY. Latitude, 59° 27'; longitude, 135° 19'. F. J. Vandewall, observer

Month	Temperature					Total pre- cipitation	Number of days—			
	Maxi- mum	Mini- mum	Mean maxi- mum	Mean mini- mum	Month- ly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	Inches				
January.....	39	-3	24.4	13.3	18.8	0.46	10	11	1	19
February.....	44	5	36.3	24.2	30.2	2.89	15	8	7	13
March.....	47	11	37.9	25.2	31.6	2.73	10	11	7	13
April.....	58	22	50.7	33.7	42.2	2.16	5	8	10	12
May.....	73	29	61.3	37.4	49.4	1.08	5	15	3	13
June.....	82	33	68.0	43.0	55.5	1.13	10	12	8	10
July.....	84	41	73.6	48.5	61.0	2.51	8	14	8	9
August.....	92	40	70.8	45.7	58.2	1.38	11	16	5	10
September.....	67	28	58.5	41.8	50.2	8.21	16	4	4	22
October.....	63	20	51.1	38.0	44.6	5.00	18	3	5	23
November.....	50	19	42.2	32.2	37.2	8.16	19	4	2	24
December.....	44	5	32.0	22.7	27.4	4.02	17	6	3	22

SITKA. Latitude, 57° 03'; longitude, 135° 19'. Weather Bureau, observer

January.....	44	13	37.2	27.5	32.4	6.40	20	5	6	20
February.....	50	10	41.5	29.8	35.6	13.31	18	6	7	15
March.....	61	19	44.4	31.2	37.8	11.17	20	4	5	22
April.....	64	30	51.2	36.0	43.6	4.71	16	5	8	17
May.....	70	30	56.8	39.9	48.4	3.05	16	8	7	16
June.....	76	38	61.6	45.7	53.6	1.19	8	10	10	10
July.....	79	44	65.3	50.5	57.9	2.28	15	6	8	17
August.....	81	46	69.2	52.9	61.0	5.28	12	10	11	10
September.....	78	37	61.2	46.7	54.0	15.17	24	6	4	20
October.....	70	34	56.9	43.4	50.2	9.19	23	7	5	19
November.....	57	26	48.3	37.6	43.0	13.99	26	4	4	22
December.....	50	11	40.1	30.8	35.4	16.10	26	3	4	24

ST. PAUL ISLAND. Latitude, 57° 15'; longitude, 170° 10'. Weather Bureau, observer

January.....	41	10	32.9	24.2	28.6	2.30	21	3	12	16
February.....	41	1	30.3	23.4	26.8	.61	13	2	15	11
March.....	39	12	34.9	27.3	31.1	1.33	20	2	14	15
April.....	42	16	35.0	26.7	30.8	.83	16	3	14	13
May.....	46	27	41.8	32.7	37.2	.89	15	1	12	18
June.....	52	30	45.6	37.2	41.4	2.66	24	1	13	16
July.....	54	37	49.6	41.1	45.4	1.91	19	1	5	25
August.....	55	40	50.7	44.1	47.4	3.96	18	0	7	24
September.....	56	34	48.3	41.5	44.9	3.66	26	0	8	22
October.....	45	29	39.8	33.9	36.8	1.92	19	0	8	23
November.....	42	24	37.4	31.9	34.6	2.02	23	3	11	16
December.....	38	12	31.3	24.7	28.0	3.23	27	0	10	21

TANANA. Latitude, 65° 10'; longitude, 152° 06'. Weather Bureau, observer

January.....	34	-56	-4.2	-21.2	-12.7	0.75	13	14	10	7
February.....	35	-21	11.0	-1.5	4.8	.92	8	8	6	14
March.....	31	-44	13.2	-5.2	4.0	1.28	11	12	7	12
April.....	46	-13	36.3	11.7	24.0	.34	4	11	13	6
May.....	70	0	57.2	33.7	45.4	1.08	8	9	19	3
June.....	85	32	69.8	45.2	57.5	1.25	11	7	14	9
July.....	87	34	75.1	46.9	61.0	1.95	10	16	8	7
August.....	85	34	75.3	44.4	59.8	.44	4	18	8	5
September.....	67	15	50.1	35.7	42.9	3.48	19	3	10	17
October.....	56	11	40.0	27.2	33.6	.09	5	4	21	6
November.....	26	-39	12.4	.5	6.4	.13	4	19	8	3
December.....	7	-48	-10.9	24.5	-17.7	.21	5	13	12	6

## Condensed meteorological reports for 1923—Continued

TALKEETNA. Latitude, 62° 19'; longitude, 150° 16'. P. W. McConley, observer

Month	Temperature					Total pre- cipita- tion	Number of days—			
	Maxi- mum	Mini- mum	Mean maxi- mum	Mean mini- mum	Month- ly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	Inches				
January.....	34	-32	14.5	-8.8	2.8	2.40	6	15	4	12
February.....	48	-12	34.4	9.0	21.7	.68	5	9	4	15
March.....	42	-18	33.9	6.3	20.1	3.08	8	15	4	12
April.....	57	8	48.1	24.4	36.2	.13	2	8	9	13
May.....	70	20	60.5	30.9	45.7	.89	5	8	9	14
June.....	75	31	68.1	40.2	54.2	1.18	9	4	7	19
July.....	90	38	75.6	46.2	60.9	3.59	9	13	6	12
August.....	88	31	75.0	44.6	59.8	1.68	8	10	2	19
September.....	71	20	55.9	33.4	44.6	8.62	18	1	2	27
October.....	67	25	51.4	32.2	41.8	2.03	11	3	3	25
November.....	45	1	33.7	16.9	25.3	.65	6	5	2	23
December.....	33	-20	14.8	-7.2	3.8	.23	5	12	2	17

VALDEZ. Latitude, 61° 07'; longitude, 146° 16'. Weather Bureau and W. T. Stuart, observers

January.....	36	-10	22.4	7.8	15.1	3.39	10	11	12	8
February.....	59	-1	33.2	17.4	25.3	5.37	9	14	2	12
March.....	43	-3	33.3	13.3	23.3	2.53	8	16	6	9
April.....	50	11	44.0	26.2	35.1	2.75	11	11	4	15
May.....	64	28	53.8	35.7	44.8	.33	8	7	7	17
June.....	71	31	60.7	43.1	51.9	2.25	13	7	12	11
July.....						3.25	7			
August.....						2.00	9			
September.....	64	25	49.3	38.9	44.1	18.60	25	9	8	13
October.....	52	31	44.0	35.7	39.8	13.61	27	7	6	18
November.....	52	12	37.7	27.0	32.4	8.01	19	13	5	12
December.....	37	-12	25.8	8.0	16.9	2.77	11	21	5	5

WHITE MOUNTAIN. Latitude, 64° 53'; longitude, 163° 42'. E. L. Range, observer

January.....	33	-40	12.4	-13.4	-0.5	1.85	13	7	13	11
February.....	35	-19	17.3	-1.2	8.0	.83	6	17	4	7
March.....	35	-32	19.9	1.5	10.7	1.13	17	10	3	18
April.....	37	-17	28.0	11.0	19.5	.32	7	10	10	10
May.....	57	6	46.5	29.4	38.0	.58	8	11	12	8
June.....	74	25	61.1	37.9	49.5	1.97	15	10	9	11
July.....						.07	1			
August.....	85	35	65.6	46.1	55.8	2.97		10	11	1
September.....	68	13	49.2	35.6	42.4	5.69	23	5	6	17
October.....	56	12	39.7	26.7	33.2	1.04	16	7	8	16
November.....	39	-11	21.5	10.2	15.8	.60	5	14	7	9
December.....	35	-36	.3	13.5	6.9	.79	5	19	0	12

YAKUTAT. Latitude, 59° 33'; longitude, 139° 44'. Rev. E. M. Axelson, observer

January.....	39	10	31.9	21.3	26.6	8.51	17	6	6	19
February.....	43	13	37.4	26.4	31.9	13.38	18	6	3	19
March.....	47	20	38.4	24.5	31.4	11.35	16	11	3	14
April.....	51	26	43.3	31.9	37.6	8.68	15	6	7	17
May.....	60	29	51.1	36.8	44.0	5.22	17	10	9	12
June.....	69	38	56.0	43.3	49.6	1.44	7	14	9	7
July.....	70	42	60.2	47.5	53.8	3.43	16	13	5	13
August.....	71	41	61.6	49.0	55.3	6.33	12	13	3	15
September.....	63	35	55.4	43.6	49.5	22.65	18	10	2	18
October.....	60	29	50.0	40.4	45.2	18.20	24	5	4	22
November.....	53	27	42.2	34.4	38.3	24.85	23	5	3	22
December.....	43	14	34.1	26.5	30.3	13.68	20	6	5	20



